

Colorado Department of Health

Comments

DRAFT FINAL

PHASE I RFI/RI WORK PLAN

ROCKY FLATS PLANT

SOLAR EVAPORATION PONDS

(Operable Unit No. 4)

NOVEMBER 1991

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Section 1.2: Why does the plan (page 1-3, second paragraph) state that "only a small fraction" of the data for this area has been validated? According to previous reports submitted on this operable unit (1989 and 1990 Annual Ground-Water Monitoring Reports for Regulated Units at Rocky Flats Plant), a large portion of this data has been previously validated. Is there a need to redo this process? If so, please clarify why.

Section 2.1: The text of paragraph 2, page 2-2, should be amended to clarify that the IM/IRA being implemented to enable Solar Ponds water and sludge removal is separate and in addition to the IM/IRA requirements of the IAG. The IM/IRA specified in the IAG is specifically intended to provide a closure process for the solar pond cells.

Section 2.2.3: The Division notes that Ponds 207-B Center and South were relined (the old liners were removed) while the North liner was repaired. See comment to Section 5.3.5.

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Section 2.2.4: This section indicates that a leak detection system was installed for Pond 207-C. Has the system ever detected a leak? If so, was the pond emptied in an attempt to locate a specific failure in the liner? Were any failures found? Were any cleanup actions taken? Does information exist to relocate the spot of any liner failure?

Section 2.4.2.1: Under the heading Lower Hydrostratigraphic (Confined) Unit, page 2-19, please indicate the units, i. e. cm/s.

Section 2.5: In reference to the last paragraph, page 2-20, the 1990 Annual Ground Water Monitoring Report for Regulated Units at Rocky Flats Plant reported that extremely high levels of volatile organic constituents (CCl_4 and trichloroethene) were found in wells at the southwest corner of Pond 207-C. There is the distinct possibility that solvents similar to these were disposed of in the ponds and that residual VOC amounts in the ponds are low because of volatilization. Are these VOC's assumed to come from a source different than the ponds?

Radionuclides identified here as "immobile" may be more mobile than suggested. Since it is known that radioactive materials were disposed of in the Original Ponds, the construction of the current system and the movement of colloidal clays may have contaminated more soils than are currently assumed. In the investigation of the Original Pond and 207-C this issue should be given full consideration and be reflected in the eventual RFI/RI Report.

Section 2.5.3: What ground water monitoring programs are included in the "RCRA Ground Water Monitoring Program" at the plant? Not all units monitored for ground water quality at the plant are regulated under RCRA. This section needs to be clarified to DOE's benefit. The specific program under which this monitoring is done should be included here.

Section 2.6.5: The first sentence, second paragraph, of the section states: "The surface water system represents a potential route of exposure from ingestion/absorption/inhalation and direct contact exposure routes. Please explain the difference, if any, between (dermal) absorption and direct contact? The conceptual model, Figure 2-30, shows only three exposure routes. The Division believes dermal absorption and dermal contact are equivalent; however, if "direct" contact is intended to reflect an additional exposure route, please amend the conceptual model. If not, correct the text.

Figure 2-14: Since holes SP04-87 and SP11-87 are used to depict lithologies on the Bedrock Geology Map, Figure 2-14, they should be included on Cross Section A-A' which passes through the affected area. The cross section may be constructed to pass directly through the holes or the holes may be projected to the cross section. (Please note that the "SP" holes are depicted in

Appendix B, but the actual borehole logs are not included.

Also, a bedrock topography map of this surface would allow DOE to draw more realistic subcrop contacts. The contacts surrounding SP04-78 and SP11-87, and the sandstone area on the east side, could be better drawn as a result.

Figure 2-30: A few comments are in order for this figure.

An arrow must be drawn from AIR to SURFACE WATER to account for both aerosols and soils being transported by wind through the air to surface water.

Another arrow must be drawn from GROUND WATER to PUMPAGE (a new Secondary Release Mechanism) to INGESTION and DERMAL CONTACT. The model must allow for the pumping of water from off-site wells and for potential future use of on-site water.

Comparable to the conceptual model for the OU-3 RFI/RI Work Plan, the Solar Ponds may be better portrayed as an Historical Source (not necessary to list) with the PIPELINE and POND LEAKAGE as Contaminant Sources. In this manner, INFILTRATION would be the Release Mechanism to GROUND WATER and SOILS. AEROSOLS may also be considered a source with WIND as a primary Release Mechanism.

Although it is possible to treat soils as a transport medium, the Division believes that the conceptual model would be better served with SOILS listed as a Contaminant Source.

With the foregoing changes as a starting point, additional, primary release mechanisms can be defined. For example, TRACKING of biota across contaminated soils would be a primary release mechanism while SEEPAGE from GROUND WATER to SURFACE WATER would be a Secondary Release Mechanism. Since both the Baseline Health Risk Assessment (re: Section 3.3.1) and the Environmental Evaluation (re: Section 9.2.1.3) will rely on the conceptual model, it should be both complete and accurate.

Section 3.0: The Division will withhold comments to this section until such time as the site-wide chemical specific potential ARAR issues have been resolved. The Division reserves the right to comment on this section at that time.

Section 4.1.4: After reviewing the Field Sampling Plan, the Division requires clarification on the process and procedures for delineation of paleochannels and fracture sets. For example, the number of borings to be "advanced deeper" (see comments to Section 7.3.5.3) are not defined. Consequently, the Division cannot determine whether the paleochannels are likely to be delineated. Also, delineation of fracture sets would appear to dictate the need for oriented core; however, coring vs. drilling has not been specified except in Table 4.1.

Table 4.1: The Division believes that the Data Quality Objectives listed in column one are generally vague. For example, Item 3, "Delineate sandstone paleochannels" should be expanded to explain the need to delineate the channels. It is appropriate to state that "characterization" of their location(s) beneath or in the vicinity of the Solar Ponds will aid in planning Phase II investigations on the nature and extent of contamination of ground water. Item 4, "Delineate fracture sets in bedrock" likewise should be expanded.

Item 5, "Install upgradient/background monitoring wells..." is not an objective. Installing wells is designed to meet an objective, in this instance, CDH Compliance Order 89-06-07-01 (Please refer to the fifth paragraph of comments to Section 7.2).

The Sampling/Analysis Activity column is similarly vague. For Item 5, will the full suite analyses continue under the "other programs". If not, why are they unnecessary? Also, the "other programs" must be specified for this portion of the plan to be effective.

For Item 7, the "selected parameters" should be described in general (i. e. TCL Metals), or a clear reference to the appropriate table(s) of Section 7 should be included.

Also under Sampling/Analysis Activity, it would be beneficial to indicate the number of holes, grid size, etc.; however, please see the comments to Section 7.

Section 5.3.1: This section specifies that "new ground water data will be reviewed to verify that proposed cluster well locations are upgradient of OU4." What data will be used, along with the ground water levels from the new wells, to evaluate whether or not these wells are actually upgradient of the unit?

This section also states "one ground water sample will be collected from each well and analyzed for the full list of parameters analyzed in the RCRA Monitoring Program." Which monitoring program is this referring to? (Please compare to previous comments on Section 2.5.3. and Table 4.1, Item 5.)

Section 5.3.2: The "more dense" grid alluded to in this section may be best described as "a 100' x 100' block centered grid superimposed upon a 100' x 100' mesh centered grid as shown on Figure 7-2."

Section 5.3.5: Although it is acceptable to place boreholes at both cracked and competent liner locations, DOE must acknowledge that previous liner replacement may result in drilling of holes where earlier leaks occurred rather than at presumed pristine locations. Also, lateral migration of contaminants from cracks to areas beneath competent liner needs to be considered.

Section 5.5.2: Reference to the 1989 Background Geochemical Characterization Report should be amended. Reference should be made to the forthcoming 1990 report or the "most recent revision".

Section 7.0: The Division requests that the term "site-wide" be reserved for true activities planned or being conducted relative to the entire Rocky Flats Plant site. Please change the affected bulleted items to read OU-wide.

Paragraph 3, page 7-1, states that a "geographic approach" is intended to allow flexibility in implementing the Phase I sampling program concurrent with the Pondcrete activities. The Division, in reviewing the entire FSP, was unable to determine how the activities can support the completion schedule for field activities (August 19, 1992, Figure 6-1) when the current schedule for completion of the cleanout is September, 1992. The Division is especially concerned since spring is approaching and construction has yet to begin on the three water holding tanks of the IM/IRA. The Division wishes to know whether the schedule is realistic and can be maintained through the "geographic approach". If the schedule cannot be maintained, what is DOE's intent?

Section 7.1: Regarding Item 5, page 7-2, the Division acknowledges the difficulty in locating wells to establish background conditions for the Solar Ponds. The Division proposes that CDH and EPA approve or disapprove, on a contaminant specific and hydrostratigraphic unit basis, whether the wells may serve as background. In this manner, above background levels of specific contaminants in a hydrostratigraphic unit will not be cause to reject the well, and all data from it, as background. The Division would still expect that what constitutes background would be determined through the Background Geochemical Characterization Report, and the applicable statistical methods, to ensure sitewide consistency of remediation goals.

For future reference, the requirements of the Phase II portion of the RFI/RI Work Plan that deal with determination of the rate and extent of contamination, as well as contaminant fate and transport, should either be similar to or complement the objectives stated in the Ground Water Assessment Plan required under CO 89-06-07-01.

Section 7.2: Under Field Sampling Plan Rationale, first paragraph, the instruments or the appropriate SOPs to be used in field screening must be specified.

In the same paragraph, it is stated that analysis of the asphalt pond liner materials would be appropriate if the liners are to be characterized for waste disposal. DOE should consider a limited sampling plan to verify results of field screening.

The Division believes that vadose monitoring techniques (last paragraph, page 7-4) should be included in this work plan rather than deferred to a later date. However, the Division does not wish to delay unaffected activities. If the techniques can be identified before the work plan is amended they should be included. If this would result in a delay in resubmitting the work plan, then a technical memorandum should be submitted as soon as possible to finalize the proposed activities.

The Division questions the proposal (paragraph 2, page 7-5) to use "downhole geophysics ... to log gamma radiation with respect to depth." For example, a radionuclide contaminated sandstone may register as a clayey sandstone or claystone rather than as a naturally-occurring, lower-gamma lithology. Although more extreme levels of activity may be discernible, there is question whether a downhole geophysical sonde is sensitive enough to differentiate between background and lower levels of contamination.

The next to last paragraph, page 7-5, states that the proposed upgradient wells were in response to a request from CDH. The upgradient monitoring wells scheduled to be installed in this plan should not be considered a "request." They are part of the RCRA ground water monitoring upgrade for IHSS 101 and other RCRA units as ordered by CDH under CO 89-06-07-01.

It is stated on page 7-2 that pond liners will be steam cleaned after the removal of liquids and sludges. Please specify the waste management practice to be used to dispose of the rinsate.

Section 7.3: Items 2 and 3, page 7-6, should be re-identified as OU wide vs. sitewide activities.

The frequency of sampling, i. e. the number of sample sites, borehole locations, piezometers and grid sizes, etc., must be summarized in a table comparable to Table 7-3 of the approved OU-7 RFI/RI work plan (OU-7's DQO Table 4-1 also included sample frequency). No such summary now exists in this work plan; it is spread across the subsections of Section 7.3 and shown on various maps. A summary is needed to enhance the Division's understanding and would be very helpful during implementation.

Section 7.3.1: Again, the wells here are not being installed due to a "request" by CDH; they are part of the upgrade of the ground water assessment plan as specified in CO 89-06-07-01.

Although these wells are not "within or immediately downgradient of an IHSS," it is important that they be potentiometrically upgradient of the waste management unit and should be as close to the designated unit boundary as possible. Were these items considered when the proposed locations for the wells were selected? Were there other considerations for the site selections for these wells? Please clarify.

According to potentiometric data presented in this plan and previous reports on the ground water quality of OU4, the potentiometric gradient in the area is mostly to the northeast with some localized northerly components.

Section 7.3.2: In the second paragraph of the section, it appears that Document Change Notice and Procedural Change Notice, referenced in earlier sections, are the same. Has not DCN been changed to PCN to update SOPs?

The Division is concerned that potential radiation hot spots between the PSZ fences may not be fully investigated. If radiation survey stations adjoining the fence detect activity, steps will have to be taken to investigate the excluded area.

The third paragraph, page 7-9, states that alpha readings will be taken 4-6 inches off the ground surface. This is unacceptable. Alpha radiation attenuates rapidly with distance and usually is not easily detected at distances greater than 3 - 5 cm (1 1/2 - 2 inches). Since the distance specified in this plan is four to six inches (10 - 15 cm), it is likely that any alpha radiation, even large amounts, will be missed under the current plan.

Under Surficial Sampling, first paragraph, page 7-10, a 1" sampling depth is proposed. SOP GT.8 specifies that the CDH method will be employed for all Interagency Agreement (IAG) projects unless the CDH method does not apply. The CDH method specifies a 1/4 inch depth not 1 inch. Is DOE proposing an alternate (grab) method as opposed to the CDH method. If so, a clear rationale must be provided indicating the need to switch methods.

Regarding the radiological survey, page 7-8, the Division is under the impression that areas with elevated levels of radionuclides have already been identified in the vicinity of the ponds. Smaller grids should be used in previously identified "hot spots" so that more definite boundaries for the contamination can be established.

Section 7.3.3: In Table 4.1 (and other narrative sections) vadose zone monitoring is proposed pending a determination of the applicable techniques. Suddenly, in this section, vadose monitoring will be incorporated into the activities "if deemed appropriate". This statement provides further reason for including the vadose zone monitoring techniques in the work plan or through a scheduled technical memorandum. This activity cannot be left to chance; the chance that it will not be fully researched and implemented.

Section 7.3.4.1: Under Field Methodology (second paragraph, page 7-12), DOE should discuss or propose, in general terms, alternate methods in the event the GPR survey is unsuccessful.

Section 7.3.4.2: Reference is made to abandonment of boreholes in the fourth paragraph, page 7-14. Has DOE considered the completion of these wells to support Phase II activities?

Section 7.3.5.3: The Division requires clarification on the process and procedures for delineation of paleochannels and fracture sets (re: Items 3 & 4, Table 4.1). The subset of proposed borings to be advanced deeper to collect bedrock structure and stratigraphic data, paragraph four, page 7-16, should be defined or the selection process should be described. Without this number or the process, the Division cannot determine whether the paleochannels are likely to be delineated. Also, delineation of fracture sets would appear to dictate the need for oriented core; however, coring vs drilling has not even been specified except in Table 4.1. The Division believes that implementation of the plan will be difficult unless these issues are clarified.

Section 7.3.6: The second paragraph of this section states that seismic refraction and reflection were considered for investigation of the ITS and that geophysics would be ineffective. Were other survey techniques such as a gravimeter, electromagnetic and GPR surveys, or combinations of surveys, considered? What problems arise in investigating the ITS vs. delineating the original Solar Pond with GPR? Both were constructed through or in alluvium.

Section 7.3.6.2: Figure 7-5, which shows the locations of the proposed piezometers, should be referenced. Please note that the figure shows the locations of only two of the three proposed parallel-to-flow piezometers. Please amend this figure and caption the Primary Interceptor Trench.

The first paragraph of this section also states that analytical modeling of aquifer drawdown will be used to determine piezometer spacing. What data are required to prepare the analytical model? Are pump or slug tests planned for the proposed unconsolidated material boreholes, as a Phase I activity, to provide the necessary data? The Division does not believe that a clear path has been planned to determine piezometer spacings.

Section 7.4.2: The Division questions why semi-volatiles are excluded from surficial soil samples (second list of page 7-19). The term semi-volatiles would suggest that residues may still be present. (Note, that in the first list, TCL semi-volatiles are not limited to subsurface samples as they are for TCL volatiles.)

Section 8.0: Reviewed; no comment.

Section 9.1.3.1: This sections indicates that small seeps and seasonal wetlands occur within the OU-4 study area; however, there is no mention of seeps in Section 2.0. Although a Phase II issue, be aware that the Division believes that sampling and analysis of seeps must included in the subsequent Phase II workplan.

Section 10.0: Please note that the Quality Assurance Addendum was submitted without management approval.

Section 10.2: Figure 1 references OU-10 in the title, not OU-4.

Section 11.0: See comment to Section 7.3.2 regarding PCNs vs DCNs. Is DCN the correct term?